



A COMPARATIVE CLINICAL STUDY TO EVALUATE THE EFFICACY OF CHATURBADRAKALPA BASTI AND KALA BASTI PATTERN WITH RASNAPANCHAKA NIRUHA BASTI IN JANUSANDHIGATA VATA (OSTEOARTHRITIS)

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ABSTRACT:

Introduction: *Sandhigata vata* is a challenging disease and one of the major causes of disability. *Sthanasmraya* of vitiated *Vata dosha* at *Janusandhi* results in the development of a disease termed as *Janusandhigata vata* having *Lakshanas* like *Sandhi shula*, *Sandhi shotha*, *Sandhi atopa* and *Prasarana akunchana vedana*, resulting in limited range of movements. Osteoarthritis is generally taken as the contemporary correlation of *Sandhigata vata*. Osteoarthritis is a joint disease characterized by degeneration of articular cartilage, hypertrophy of bone at the margins and changes in the synovial membrane. *Shodana* is the ideal treatment for getting benefits like *Brihmana*, *Dhatuposhaka* and *Shodana*. Owing to the predominance of *Vata*, *Basti* is selected.

Objective: To compare the efficacy of *Chaturbadrakalpa Basti* and *Kala Basti* pattern with *Rasnapanchaka Niruha basti* in *Janusandhigata Vata*.

Methodology: The study was a comparative clinical study involving 2 groups of 20 subjects each with pre and post-test trial. In group A, *Chaturbadrakalpa Basti* with *Rasnapanchaka Niruha basti* and in group B, *Kala Basti* with *Rasnapanchaka Niruha basti* was carried out. The assessment was done based on subjective parameters like pain, swelling and WOMAC Index and objective parameters like tenderness, crepitus and range of movements.

Result: After the completion of intervention, it was noted that there was significant reduction in all signs and symptoms among 40 subjects. All though both the groups had similar results, Subjects in group A had higher severity and chronicity. Thus, it can be said that the results were better in group A.

Conclusion: Based on the results it can concluded that both groups showed statistically significant results in subjective and objective parameters.

Keywords: *Sandhigata Vata*, Osteoarthritis, *Chaturbadrakalpa Basti*, *Kala Basti*, *Rasnapanchaka Niruha basti*

INTRODUCTION:

Sandhigata vata is a challenging disease and one of the major causes of disability. *Sandhigata vata* is presenting with *Sandhi shula*, *Sandhi shotha*, *Sandhi atopa* and *Prasarana akunchana Vedana*¹, resulting in limited range of movements. *Sthanasmraya* of vitiated *Vata dosha* at *Janusandhi* results in the development of a disease termed as *Janusandhigata vata*.

Osteoarthritis is generally taken as the contemporary correlation of *Sandhigata vata*. Osteoarthritis is a joint disease characterized by degeneration of articular cartilage, hypertrophy of bone at the margins and changes in the synovial

membrane². The symptoms of Osteoarthritis include Pain, Swelling, Stiffness and Disability in movements. Pain, swelling or stiffness can make it difficult for individuals to perform simple activities of daily living.

In Ayurveda the treatment explained for *Sandhigata vata* includes *Snehana*, *Upanaha*, *Agnikarma*, *Bandana* and *Unmardana*. *Bastikarma* is the important treatment modality for *Vatavyadhi*³. There are various types of *Basti* explained in classics based on ingredients. Specific action and different Pattern of administration. *Chaturbadrakalpa basti* and *Kalabasti* are one among them. Administration of 4 *Snehabasti* initially followed by 4 *Niruhabasti* and 4 *Sneha basti* at the end of procedure is known as *Chaturbhadra kalpa* and it is *Niratyaya*. Although it is said to be *Niratyaya* and *Sukhavaha*⁴ it is not widely practiced. *Kalabasti* comprises of 15 basti of which 5 are *Niruha* and 10 are *Anuvasana* given in *vatapradhana* and *Madhyama doshavastha*⁵.

Sandhigata vata needs a specific intervention which is *Dhatuposhaka*, *Vedanashamaka* and *Shothahara*. Hence present study is taken as a Comparative clinical study to evaluate the efficacy of *Chaturbadrakalpa basti* and *Kalabasti* with *Rasnapanchaka Niruhabasti* in *Janusandhigata vata* as the drugs are said to be *Vatagna*.

MATERIALS AND METHODS:

SOURCE OF DATA

The subjects from the OPD and IPD of Government Ayurveda College and Hospital, Mysore and Government Hitech Panchakarma Hospital, Mysore who fulfilled the inclusion criteria of the study were selected randomly irrespective of their sex, religion etc.

SOURCE OF THE DRUG

Drugs were procured from GMP certified pharmacy.

DIAGNOSTIC CRITERIA

- Subjects having *Lakshanas* of *Janusandhigata vata* (Osteoarthritis of Kneejoint) -*Sandhi shula* (Pain), *Sandhi shotha* (Swelling), *Sthamba* (Stiffness), *Sandhi atopa* (Crepitus), *Prasarana akunchana Vedana* (Restricted movements)
- Radiology: Plain X-ray of Knee joint – AP and Lateral view (joint space narrowing, Subchondral sclerosis, Osteophytes)

INCLUSION CRITERIA

- Subjects fulfilled the diagnostic criteria
- Subjects in the age group between 35-60 years, irrespective of gender, socio economic status
- Subjects fit for *Basti Karma*

EXCLUSION CRITERIA

- Subjects undergone knee replacement
- Subjects of *Janusandhigata vata* due to *Abhigata*
- Subjects with Diabetes Mellitus, Uncontrolled Hypertension (> 140/90 mm hg) and other systemic illness which interfere with the intervention of treatment
- Subjects with Obesity Grade 2 and above
- Pregnant and lactating women

STUDY DESIGN

A comparative clinical trial with pre and post-test design.

PLAN OF STUDY

Sample size & Grouping-

40 subjects were randomly divided into 2 groups, A&B with 20 subjects in each group. For group A *Chaturbadrakalpa basti* and for group B *Kalabasti* was administered.

Sampling method-

Purposive sampling method was followed.

Study duration-

The study duration was 45 days

- Duration of intervention- 12 days in group A, 15 days in group B

- Assessments done on
Pre-test: 0th day (On the day of admission)

Mid test: 13th day (In Group A)

16th day (In Group B)

Follow up: 45th day

INTERVENTION

Basti pattern

group a (*chaturbadrakalpa basti*)

1	2	3	4	5	6	7	8	9	10	11	12
A	A	A	A	N	N	N	N	A	A	A	A

group b (*kala basti*)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
A	A	N	A	N	A	N	A	N	A	N	A	A	A	A

For both groups,

Niruha basti with

table no.1- ingredients of *rasnapanchaka niruha basti* (*shadprasruthika basti*)

Ingredients	Quantity used in the study
<i>Madhu</i>	1½ <i>Pala</i> – 70 ml
<i>Saindhava</i>	½ <i>Karsha</i> – 6 g
<i>Ksheerabala Taila</i>	3 <i>Pala</i> – 140 ml
<i>Shatapushpa Kalka</i>	1 <i>Pala</i> – 48 gm
<i>Rasnapanchaka Kwatha</i>	6 ½ <i>Pala</i> – 310 ml
Total	560 ml

Anuvasana basti with *Ksheerabala taila* – 70 ml

NIRUHA BASTI

- Poorvakarma**

Malamootra visarjana was ensured for the subject.

After ensuring that the subject is not *Kshudhitha*, *Sarvanga abhyanga* and *swedana* was carried out.

- Pradhanakarma**

Before initiating the procedure, subject's vitals were recorded.

Subject was made to lie down in left lateral position. Anal orifice of the subject and tip of the catheter were smeared with *Sneha* for the lubrication and *Basti* was administered with the help of enema can.

- Paschatkarma**

After administration of *Basti dravya* subject was asked to lie in supine position for *Shatamatrakala* following this on appearance of *Vega* subject is advised to sit in *Utkadasana*.

After evacuation of *Basti* advised to have *Ushna jala snana* and *Laghushna bhojana*.

ANUVASANA BASTI

- Poorvakarma**

After *Abyanga* and *swedana* subject should have hot water bath.

After this, he or she was advised to take *Ushna*, *laghu* and *drava pradhana ahara* and walk for upto 100 steps.

The quantity of food should be 1/4th of the usual quantity.

- **Pradhanakarma**

Before initiating the procedure, subject's vitals were recorded.

The prescribed amount of *Basti Dravya* was taken in the Glycerine syringe and rubber catheter was attached to its tip. Tip of the catheter is lubricated with oil and *Sneha* is administered.

- **Paschatkarma**

Sphik tadana and gentle rubbing of hasta, pada was done.

The foot end of the table is raised to little extent for three times.

ASSESSMENT CRITERIA

Subjective parameters-

1. Pain (Numerical rating scale)

1	2	3	4	5	6	7	8	9	10
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Scale -0 = No pain

1-3 = Mild pain

4-6 = Moderate pain

7-10= Severe pain

2. WOMAC Osteoarthritis index

table no.2- parameters of womac osteoarthritis index

Characters	Gradings				
1.Pain	0	1	2	3	4
Walking					
Climbing stairs					
Nocturnal					
Rest					
Weight bearing					
2. Stiffness					
Morning stiffness					
Occuring later in the day					
3. Physical function					
Descending stairs					
Ascending stairs					
Rising from sitting					
Standing					
Bending to floor					
Walking on flat surface					
Getting in/ out of car					
Going shopping					
Putting on socks					
Lying in bed					
Taking off socks					
Rising from bed					

Getting in/out of bath					
Sitting					
Getting on/off toilet					
Heavy domestic duties					
Light domestic duties					
Total					

Total score: ____/96

3. Swelling

Absent:0

Mild:1

Moderate: 2

Severe: 3

Objective parameters-

1. Tenderness

No tenderness:0

Patient complains of pain:1

Patient complains of pain and winces:2

Patient withdraws joint on touch:3

Patient doesn't allow to touch the joint:4

2. Crepitus

No crepitus:0

Palpable crepitus:1

Audible crepitus:2

3. Range of movements (with goniometer)

140: 0

90-140: 1

40-90: 2

0-40: 3

The results were analyzed statistically by using Paired t test, ANOVA Repeated measures as inferential statistics and mean, standard deviation as descriptive statistics using SPSS for windows software.

OBSERVATIONS

In the present study it was observed that Janusandhigata vata was common in the age group of 55-65 years, females (75%) were more affected than males (25%), it was mostly observed in people who were exposed to moderate physical activity, among 30 female subjects 22(73.3%) had attained menopause, it was mostly observed in people belonged to a range of 50-70 kgs.

RESULTS

1. PAIN-

Group A

Before treatment among 20 subjects, 17 had severe pain (pain >7) and 3 had moderate pain. After completion of *Basti* 1 subject had moderate pain (3-6) 12 had minimal pain and 7 had no pain with a statistically highly significant P value of 0.000. In the follow up on 45th day, 6 subjects had minimal pain and 14 had no pain with a statistically highly significant P value of 0.000. in total all the 20 subjects had reduction in pain after the treatment.

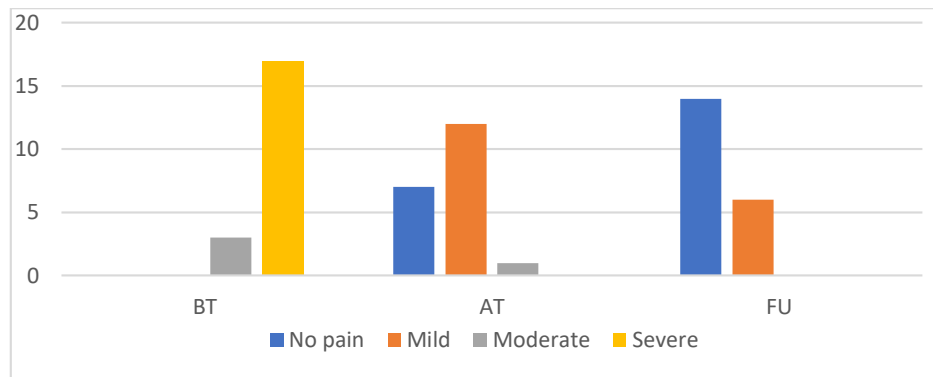


figure no:1 - results on pain in group a

Group B

Before treatment among 20 subjects, 18 had severe pain (pain >7) and 2 had moderate pain. After completion of *Basti* 1 subject had moderate pain (3-6) 14 had minimal pain and 5 had no pain with a statistically highly significant P value of 0.000. In the follow up on 45th day, 4 subjects had minimal pain and 16 had no pain with a statistically highly significant P value of 0.000. in total all the 20 subjects had reduction in pain after the treatment.

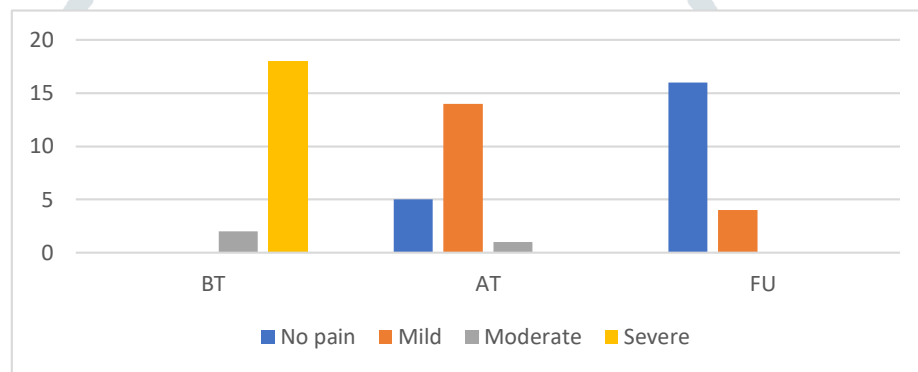


figure no:2 - results on pain in group b

In reduction of pain there is no significant difference between Group A and Group B.

This reduction of Pain is probably due to *Shamana* of *Prakupitha Vata* through *Basti*.

2. SWELLING

Group A:

Before treatment among 20 subjects, 4 had Moderate swelling 8 had mild swelling and 8 had no swelling. After completion of *Basti* 2 subjects had mild swelling and 18 had no swelling with a statistically significant P value of 0.001. In the follow up on 45th day, No one had complaints of swelling with a statistically insignificant P value of 0.157.

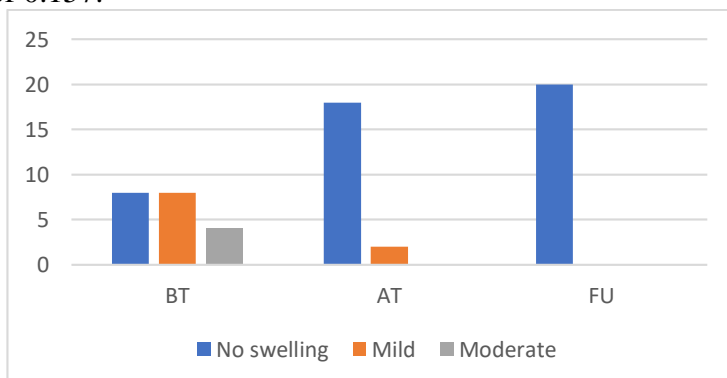


figure no:3 - results on swelling in group a

Group B:

Before treatment among 20 subjects, 2 had Moderate swelling 11 had mild swelling and 7 had no swelling with a statistically significant P value of 0.001. After completion of *Basti* and in the follow up on 45th day, no one had complaints of swelling with a statistically insignificant P value of 1.000.

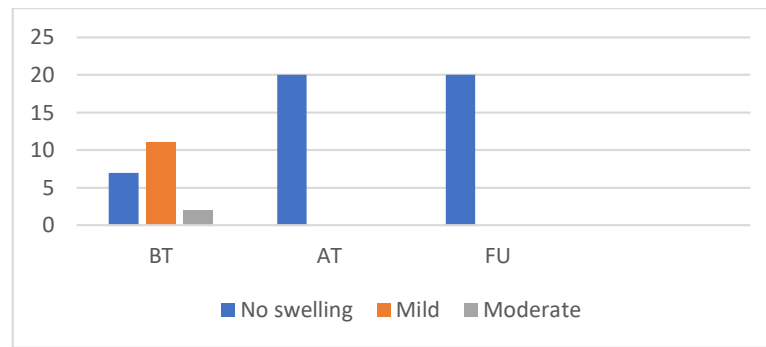


figure no: 4 - results on swelling in group b

The reduction of Swelling is probably due to Anti-inflammatory action of Chemical constituents present in *Ksheerabala taila* and *Rasnapanchaka qwatha*.

3. WOMAC OSTEOARTHRITIS INDEX**Group A:**

Before treatment among 20 subjects, 1 had score of 30-39, 1 had score of 40-49, 8 had score of 50-59, 8 had score of 60-69 and 2 had score of 70-79. After completion of *Basti*, 1 had score of 20-29, 12 had score of 10-19 and 7 had score of 0-9 with a statistically highly significant P value of 0.000. In the follow up on 45th day, 3 had score of 10-19 and 17 had score of 0-9 with a statistically significant P value of 0.001.

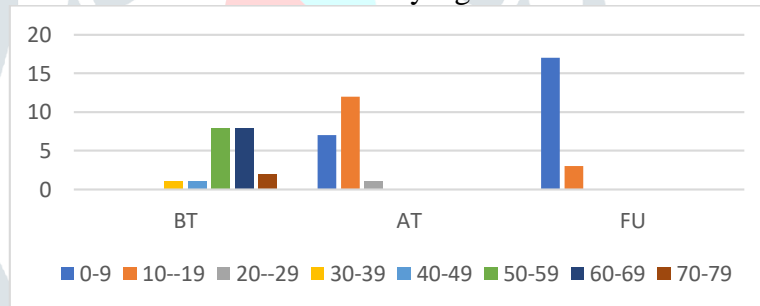


figure no:5 - results on womac index in group a

Group B:

Before treatment among 20 subjects, 3 had score of 40-49, 9 had score of 50-59, 6 had score of 60-69 and 2 had score of 70-79. After completion of *Basti*, 1 had score of 20-29, 14 had score of 10-19 and 5 had score of 0-9 with a statistically highly significant P value of 0.000. In the follow up on 45th day, 3 had score of 10-19 and 17 had score of 0-9 with a statistically significant P value of 0.001.

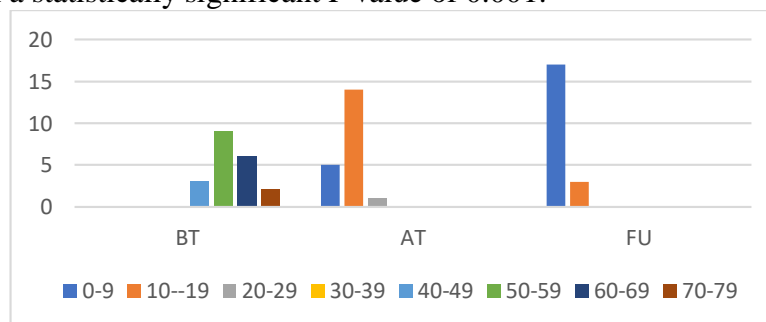


figure no:6- results on womac index in group b

This reduction in criteria's of WOMAC index is due to *Shamana* of *Vata* which is responsible for *Shula*.

4. TENDERNESS

Group A:

Before treatment, 7 subjects had grading of 3 (withdraws joint on touch) and 13 had grading of 2 (complains of pain and winces). After *Basti* marked reduction in tenderness was observed. That is grade 0 (no pain) in 12 subjects and grade 1 (complaints of pain) in 8 subjects with a statistically highly significant P value of 0.000. In the follow up on 45th day 2 subjects had grading of 1 and 18 had grading of 0 with statistically insignificant P value of 0.025.

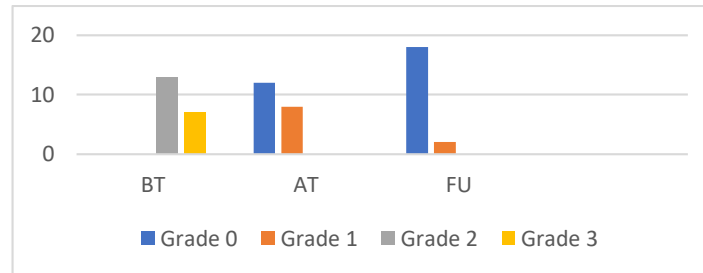


figure no:7 - results on tenderness in group a

Group B:

Before treatment, 13 subjects had grading of 3 (withdraws joint on touch) 6 had grading of 2 (complains of pain and winces) and 1 had grading of 1 (complaints of pain). After *Basti* marked reduction in tenderness was observed. That is grade 0 (no pain) in 8 subjects and grade 1 in 12 subjects with a statistically highly significant P value of 0.000. In the follow up on 45th day 1 subject had grading of 2, 1 had grading of 1 and 18 had grading of 0 with statistically insignificant P value of 0.052.

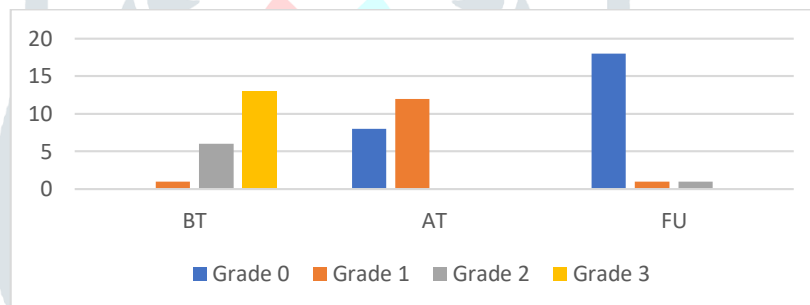


figure no:8- results on tenderness in group b

This reduction in Tenderness is due to *Shamana* of *Vata* which is responsible for *Shula* and analgesic action of chemical constituents present in *Rasnapanchaka qwatha*.

5. CREPITUS

Group A:

Before treatment, 8 subject had audible crepitus, 11 had palpable crepitus and 1 had no crepitus. After treatment 19 had palpable crepitus and 1 had no crepitus with a statistically insignificant P value of 0.005. In the follow up also same result was observed.

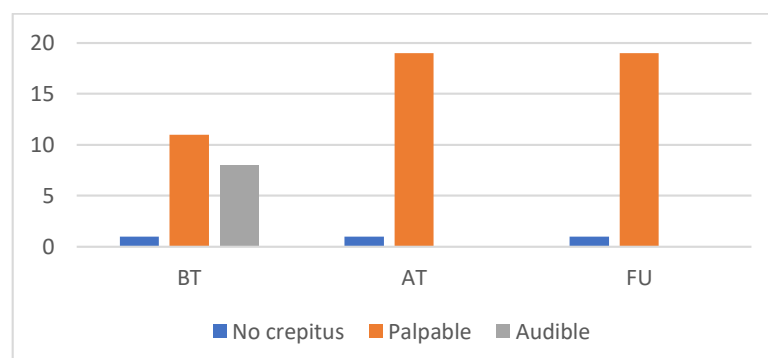


figure no:9- results on crepitus in group a

Group B:

Before treatment, 14 subject had audible crepitus and 6 had palpable crepitus. After treatment 2 had audible crepitus and 18 had palpable crepitus with a statistically significant P value of 0.001. In the follow up on 45th day all 20 had palpable crepitus with a statistically insignificant P value of 0.317.

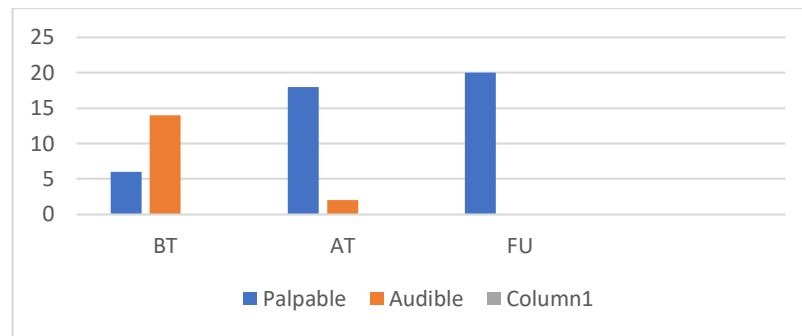


figure no:10 - results on tenderness in group b

This reduction in Crepitus is Probably due to *Shamana* of *Ruksha guna* of *Vata*.

6. RANGE OF MOVEMENTS**Group A:**

Before treatment, 1 subject had range between 0-40 degree, 15 had range between 40-90 degree and 4 had range between 90-140. After treatment 2 had range between 40-90 degree, 15 had range between 90-140 degree and 1 had full degree of flexion with a statistically highly significant P value of 0.000. In the follow up on 45th day 15 had range between 90-140 degree and 5 had full degree of flexion with a statistically insignificant P value of 0.083.

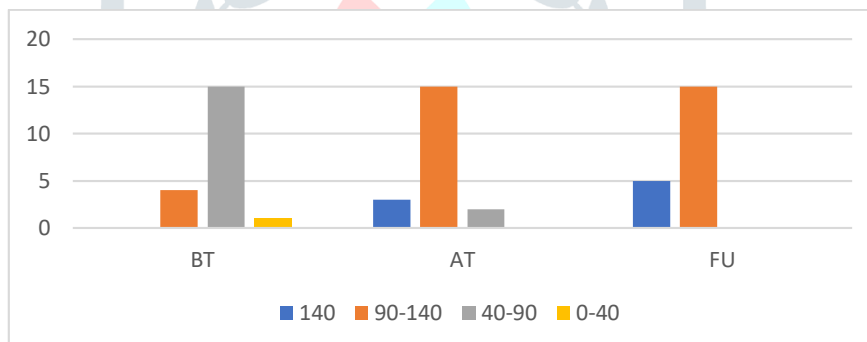


figure no:11- results on range of movements in group a

Group B:

Before treatment, 5 subjects had range between 0-40 degree and 15 had range between 40-90. After treatment 1 had range between 40-90 degree and 19 had range between 90-140 degree with a statistically highly significant P value of 0.000. In the follow up on 45th day 17 had range between 90-140 degree and 3 had full degree of flexion with a statistically insignificant P value of 0.083.

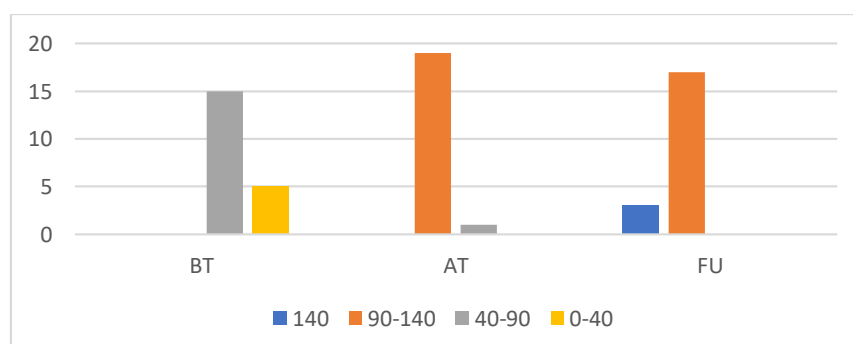


figure no:12 - results on range of movements in group b

This improvement is probably due to *Shamana* of *Vata* which is responsible for *Shula*.

DISCUSSION

Administration of *Basti* with *Ksheerabala taila* and *Rasnapanchaka qwatha* helps in removal of *Sanga* of *Vyana vata* and in turn leads to *Samprapthi vighatana*.

Basti is the best treatment for *Vata* as said by *Acharya Charaka- Vasthi hi Vataharanam*⁶. Administered drug first reaches to the *Pakvashaya*. *Pakvashaya* is the chief site of *Vatadosha*. Thus, by its action on the chief site, *Basti* gets control on *Vata* all over the body. *Pakvashaya* is the site of *Purishadhara kala*. Commentator *Dalhana* has said *Purishadhara* and *Asthidara kala* are one and same. *Basti* drugs directly acts on *Purishadhara kala* so we can take its direct action on *Asthidara kala* also. Thus, through *Basti* we can achieve *Vata dosha shamana* and *Snehana* of *Asthi dhatu*.

Through the administration of *Ksheerabala taila* as *Anuvasana basti* the phytoconstituents which has affinity towards *Asthi* and *majja* crosses the rectal mucosa. Due to the *Snigdha guna* it helps in the production of synovial fluid and in turn helps in the reduction of friction between joints. The phytoconstituents like ethyl acetate and ethanolic extract act as anti-inflammatory and analgesics, helps in reduction of swelling and pain.

table no:3- phytoconstituents of *rasnapanchaka qwatha*

Phytoconstituents	Action
Hexane, Neolupenol, Ricinoleic acid	Anti-inflammatory
Moretenol acetate	Anti arthritic
Quercitrin	Analgesic

After absorption the active principles in *Rasnapanchaka qwatha* reaches systemic circulation and circulates throughout the body and produces desired effect.

CONCLUSION

- Although *Chaturbadrakalpa basti* is said to be *Niratyaya* and *Sukhavaha* it is not widely practiced. So, to explore its benefits this has been selected for the study.
- There was significant reduction in subjective and objective parameters in all 40 subjects.
- Even though Subjects in group A had higher severity and chronicity they got significant results.
- During Follow up, the number of subjects with mild increase in symptoms were less in Group A than Group B.

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